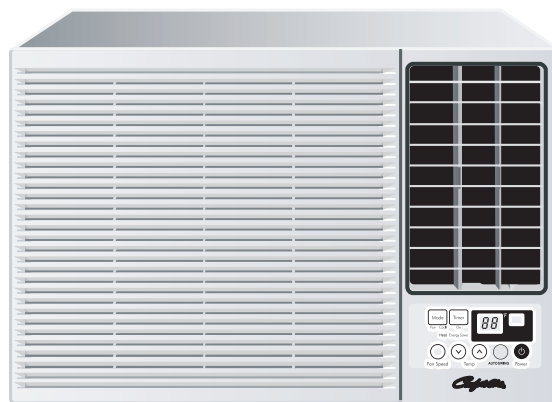


HEAT CONTROLLER, INC.

Comfort-Cire®

Room Air Conditioner

MODELS: REG-183A
REG-243A



SERVICE MANUAL

CAUTION

- BEFORE SERVICING THE UNIT, READ THE SAFETY PRECAUTIONS IN THIS MANUAL.
- ONLY FOR AUTHORIZED SERVICE PERSONNEL

TABLE OF CONTENTS

| | |
|---|-----------|
| Safety Precautions | 3 |
| Dimensions | 5 |
| Product Specifications | 6 |
| Installation | 8 |
| How to Install the Unit | 8 |
| How to use the Reversible Inlet grille | 8 |
| Window Requirements | 9 |
| Installation Kits Contents (some models including installation kit) | 10 |
| Suggested tool Requirements | 10 |
| Cabinet Installation..... | 11 |
| Operation | 13 |
| Disassembly instructions | 14 |
| Mechanical parts | 14 |
| Air Handling Parts | 15 |
| Electrical Parts | 16 |
| Refrigeration cycle | 19 |
| Schematic Diagram | 22 |
| Troubleshooting guide | 23 |
| Piping System | 23 |
| Troubleshooting guide | 24 |
| Room Air Conditioner Voltage Limits..... | 26 |

Safety Precautions



To prevent injury to the user or other people and property damage, the following instructions must be followed.

- Incorrect operation due to ignoring instruction will cause harm or damage. The seriousness is classified by the following indications.

⚠ WARNING This symbol indicates the possibility of death or serious injury.

⚠ CAUTION This symbol indicates the possibility of injury or damage to property only.

- Meanings of symbols used in this manual are as shown below.

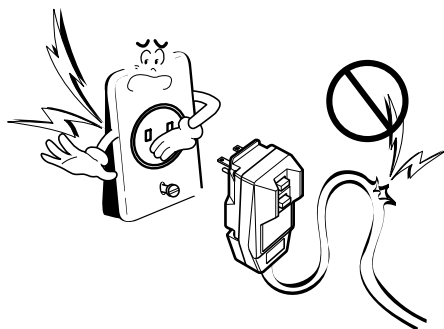
| | |
|---|---|
|  | Be sure not to do. |
|  | Be sure to follow the instruction. |

⚠ WARNING

■ Installation

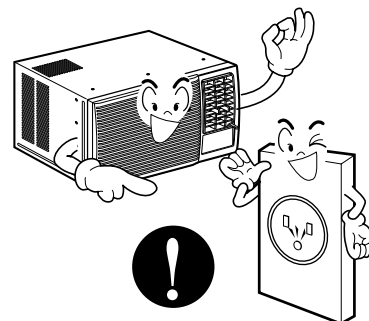
Do not use damaged power cord plugs, or a loose socket.

- There is risk of fire or electric shock.



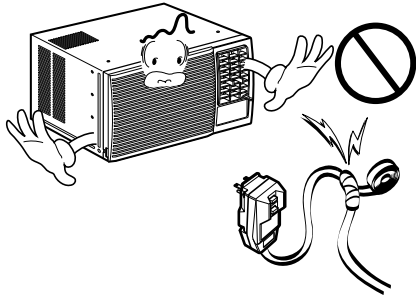
Always use the power plug and socket with the ground terminal.

- There is risk of electric shock.



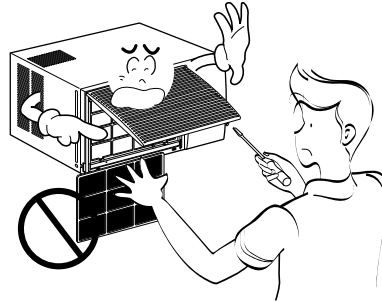
Do not modify or extend the power cord.

- There is risk of fire or electric shock.



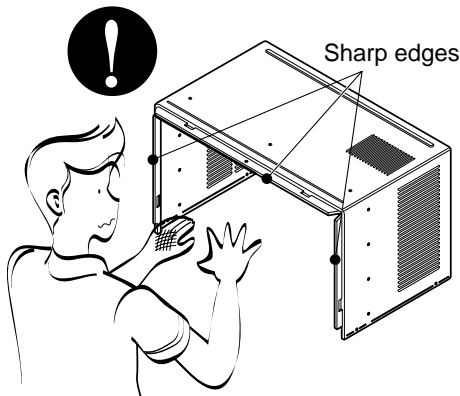
Do not install, remove, or re-install the unit by yourself(customer).

- There is risk of fire, electric shock, explosion, or injury.



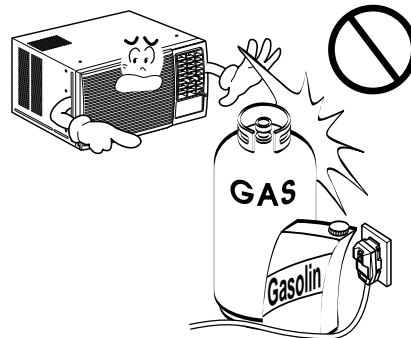
Be cautious when unpacking and installing the product.

- Sharp edges could cause injury. Be especially careful of the case edges and the fins on the condenser and evaporator.



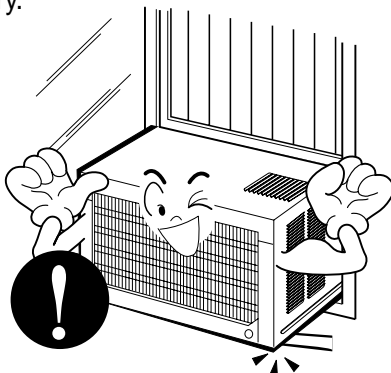
Do not store or use flammable gas or combustibles near the air conditioner.

- There is risk of fire or failure of product.



Be sure the installation area does not deteriorate with age.

- If the base collapses, the air conditioner could fall with it, causing property damage, product failure, and personal injury.



Dimensions

Symbols Used in this Manual



This symbol alerts you to the risk of electric shock.

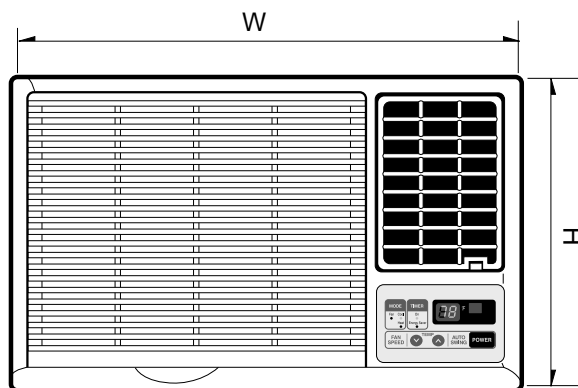
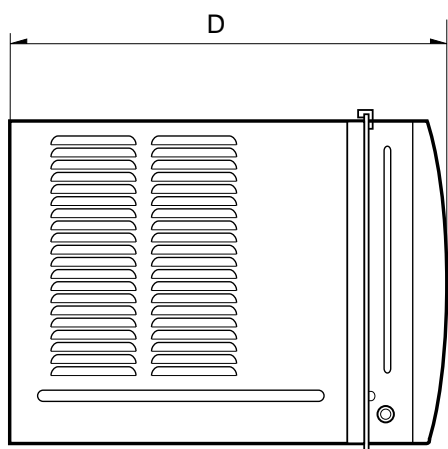


This symbol alerts you to hazards that could cause harm to the air conditioner.

NOTICE

This symbol indicates special notes.

Outside Dimensions



| Dimension | | Model | REG-183A | REG-243A |
|-----------|----------|-------|---|---|
| | | | | |
| W | mm(inch) | | 660 (26) | 660 (26) |
| H | mm(inch) | | 428 (16 ²⁷ / ₃₂) | 428 (16 ²⁷ / ₃₂) |
| D | mm(inch) | | 770(30 ⁵ / ₁₆) | 770 (30 ⁵ / ₁₆) |

Product Specifications

| ITEMS | | MODELS | REG-183A | REG-243A |
|----------------------------------|-----------------|-------------|---|---|
| | | | | |
| POWER SUPPLY | | | 1Ø, 208/230V, 60Hz | 1Ø, 208/230V, 60Hz |
| COOLING CAPACITY | | (Btu/h) | 17,500/17,000 | 23,00/23,500 |
| INPUT | | (W) | 1,800/1,750 | 2,700/2,760 |
| RUNNING CURRENT | | (A) | 8.2/8.8 | 13.2/12.2 |
| E.E.R | | (BTU/W.h) | 9.7/9.7 | 8.5/8.5 |
| HEATING CAPACITY | | (Btu/h) | 11,600/9,400 | 9,400/11,600 |
| INPUT | | (W) | 3,100/3,670 | 3,750/3,770 |
| RUNNING CURRENT | | (A) | 15.0/16.0 | 15.0/16.0 |
| OPERATING CONDITION | COOLING | INDOOR(°C) | 26.7 (DB)* | 19.4 (WB)** |
| | | OUTDOOR(°C) | 35 (DB)* | 23.9 (WB)** |
| | HEATING | INDOOR(°C) | 21.1 (DB)* | 15.6 (DB)** |
| | | OUTDOOR(°C) | 8.3 (DB)* | 6.1 (DB)** |
| REFRIGERANT (R-22) CHARGE | | | 810(28.6oz) | 1040(36.7oz) |
| EVAPORATOR | | | 3ROW 18STACKS | 3ROW 15STACKS |
| CONDENSER | | | 2ROW 19STACKS,L-BENDING TYPE | 2ROW 16STACKS,L-BENDING TYPE |
| FAN, INDOOR | | | BLOWER | |
| FAN, OUTDOOR | | | PROPELLER TYPE FAN WITH SLINGER-RING | |
| FAN SPEEDS, FAN/COOLING/HEATING | | | 1 / 2 / 2 | 1 / 2 / 2 |
| FAN MOTOR | | | 6 POLES | |
| OPERATION CONTROL | | | TOUCH PANEL | |
| ROOM TEMP. CONTROL | | | THERMISTOR | |
| AIR DIRECTION CONTROL | | | VERTICAL LOUVER(RIGHT&LEFT) HORIZONTAL LOUVER(UP&DOWN) | |
| CONSTRUCTION | | | SLIDE IN-OUT CHASSIS | |
| ELECTRIC HEATER | | | 3.5KW, 230V | |
| PROTECTOR | COMPRESSOR | | INTERNAL OVERLOAD PROTECTOR | |
| | FAN MOTOR | | INTERNAL THERMAL PROTECTOR | |
| | ELECTRIC HEATER | | FUSE LINK, BIMETAL THERMOSTAT | |
| POWER CORD | | | 1.6m(3 WIRE WITH GROUNDING) ATTACHMENT PLUG(CORD-CONNECTED TYPE) | |
| DRAIN SYSTEM | | | DRAIN PIPE OR SPLASHED BY FAN SLINGER | |
| NET WEIGHT | | (lbs/kg) | 137/62 | 146/66 |
| OUTSIDE DIMENSION (W x H x D) | (inch) | | 26 X 16 ²⁷ / ₃₂ X 30 ⁵ / ₁₆ | 26 X 16 ²⁷ / ₃₂ X 30 ⁵ / ₁₆ |
| | (mm) | | 660 X 428 X 770 | 660 X 428 X 770 |

* DB:Dry Bulb

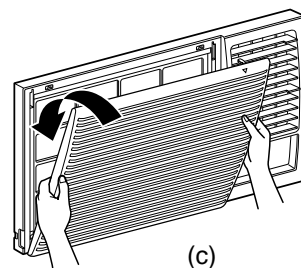
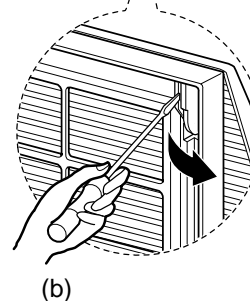
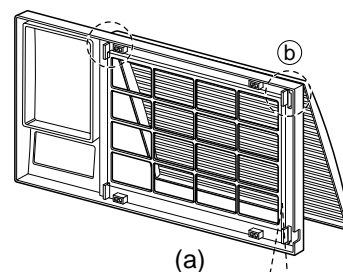
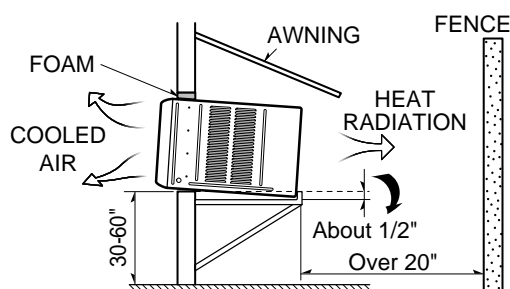
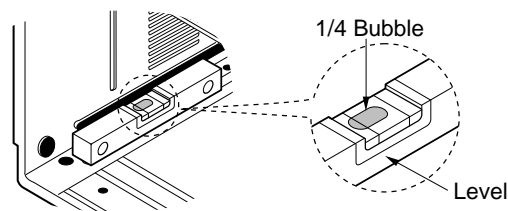
**WB:Wet Bulb

NOTE: Please refer to Label Quality on the product since this specification may be changed for improving performance.

INSTALLATION

How to Install the unit

1. To avoid vibration and noise, make sure the unit is installed securely and firmly.
2. Install the unit where the sunlight does not shine directly on the unit.
If the unit receives direct sunlight, build an awning to shade the cabinet.
3. There should be no obstacle, like a fence, within 20" which might restrict heat radiation from the condenser.
4. To prevent reducing performance, install the unit so that louvers of the cabinet are not blocked.
5. Install the unit a little obliquely outward not to leak the condensed water into the room (about 1/2" or 1/4 bubble with level).
6. Install the unit with its bottom portion 30~60" above the floor level.
7. Stuff the foam between the top of the unit and the wall to prevent air and insects from getting into the room.
8. The power cord must be connected to an independent circuit. The green wire must be grounded.
9. Connect the drain tube to the base pan hole in the rear side if you need to drain (consult a dealer).
Plastic hose or equivalent may be connected to the drain tube.



How to use the Reversible Inlet grille

The grille is designed to clean the filter both upward and downward.

A. BEFORE ATTACHING THE FRONT GRILLE TO THE CABINET, IF YOU WANT TO PULL OUT THE FILTER UPWARD;

1. Open the inlet grille slightly (a).
2. Turn inside out the front grille (a).
3. Disassemble the inlet grille from the front grille with separating the hinged part by inserting a straight type screw-driver tip (b).
4. Then, rotate the inlet grille 180 degrees and insert the hooks into bottom holes of the front grille.
5. Insert the filter and attach the front grille to the cabinet.

B. IF YOU WANT TO PULL OUT THE FILTER DOWNWARD; THE GRILLE IS ALREADY DESIGNED FOR THAT WAY.

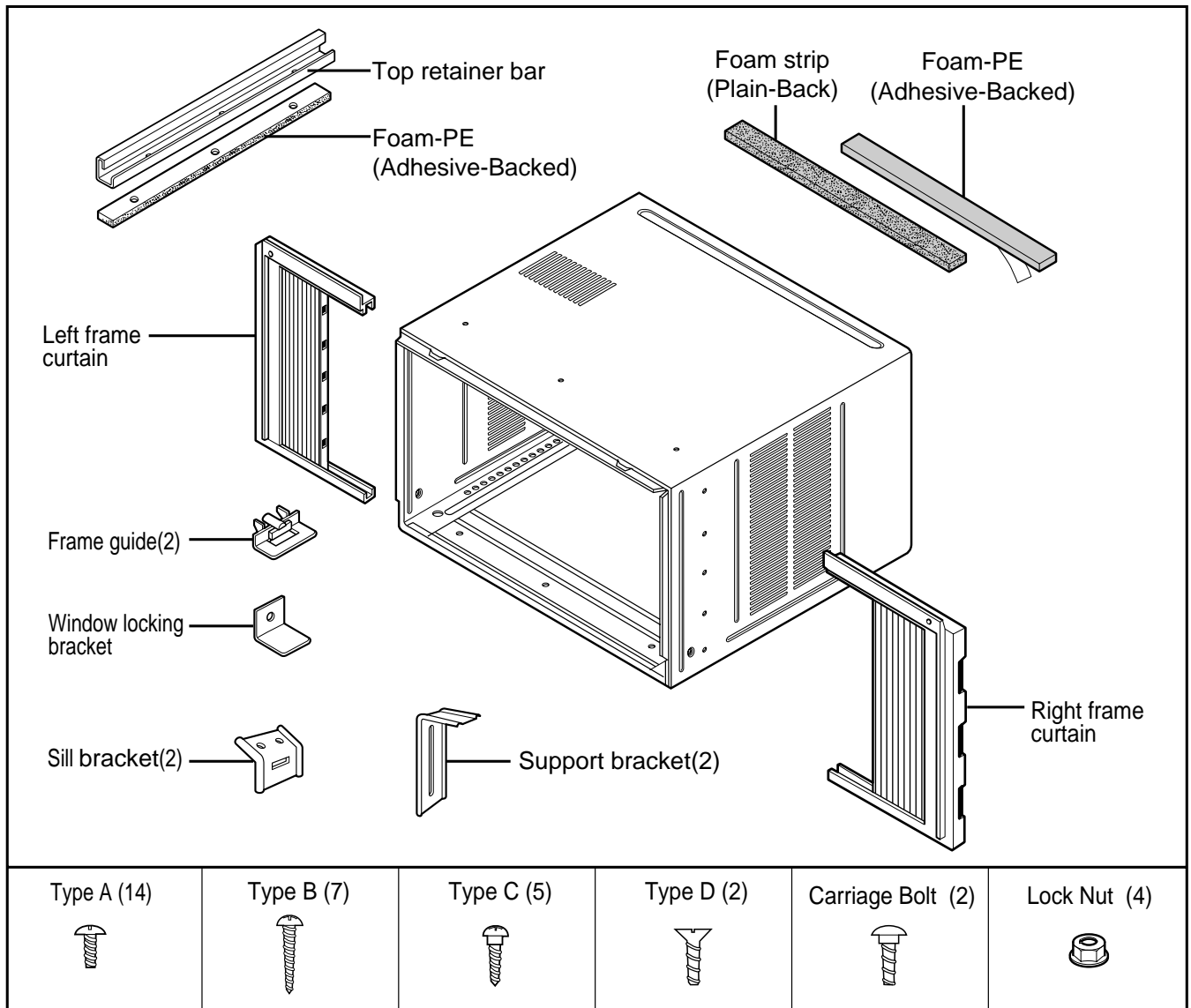
Window Requirements

NOTICE All supporting parts should be secured to firm wood, masonry, or metal.

• WINDOW REQUIREMENTS

1. This unit is designed for installation in standard double hung windows with actual opening widths from 29" to 41". The top and bottom window sashes must open sufficiently to allow a clear vertical opening of 18" from the bottom of the upper sash to the window stool.
2. The stool offset (height between the stool and sill) must be less than 1 1/4".

Installation Kits Contents (some models including installation kit)



Suggested tool Requirements

SCREWDRIVER(+, -), RULER, KNIFE, HAMMER, PENCIL, LEVEL

• PREPARATION OF CHASSIS

1. Remove the screws which fasten the cabinet at both sides and at the back. Keep these two screws which fasten the cabinet at both sides for later use.

2. Slide the unit out from the cabinet by gripping the base pan handle and pulling forward while bracing the cabinet.

3. Cut the window sash seal to the proper length. Peel off the backing and attach the Foam-PE to the underside of the window sash.

4. Remove the backing from Foam-PE with 3 holes and attach it to the bottom of the Top retainer bar.

5. Attach the Top retainer bar onto the top of the cabinet with 3 screws (Type A).

6. Insert the Frame guides into the bottom of the cabinet.

7. Insert the Frame Curtain into the Top retainer bar and Frame guides.

8. Fasten the curtains to the unit with 10 screws (Type A) at both sides.

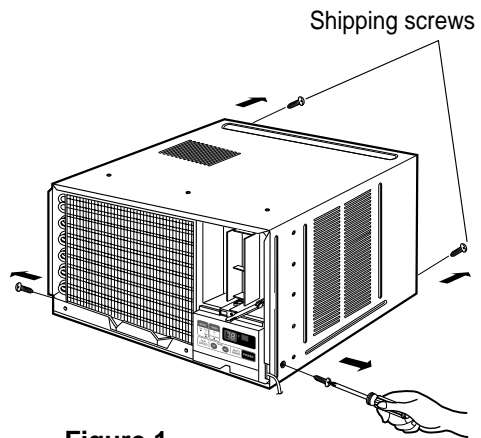


Figure 1

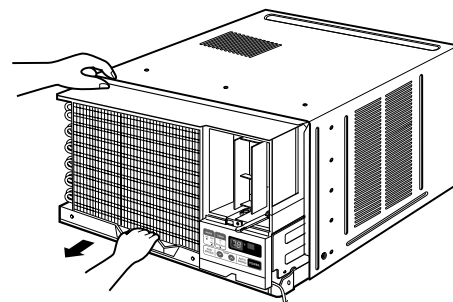


Figure 2

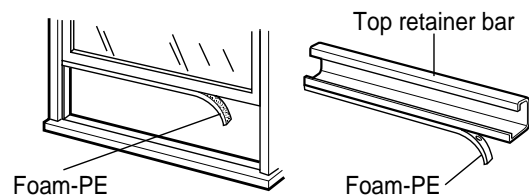


Figure 3

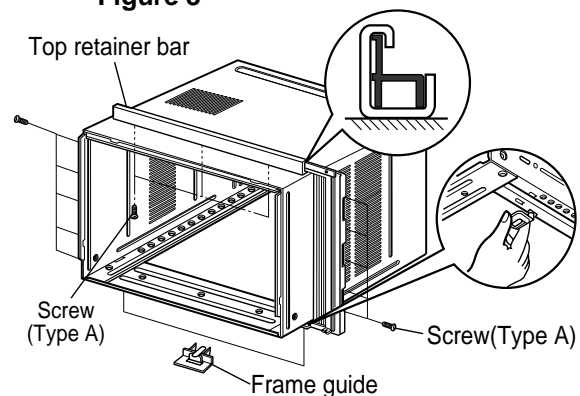
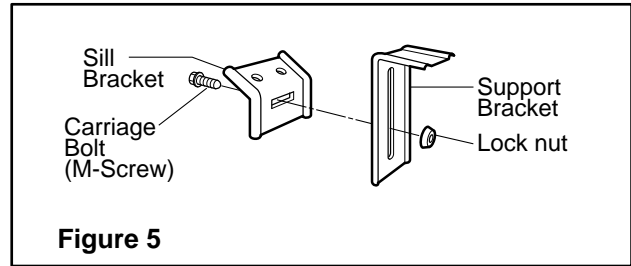


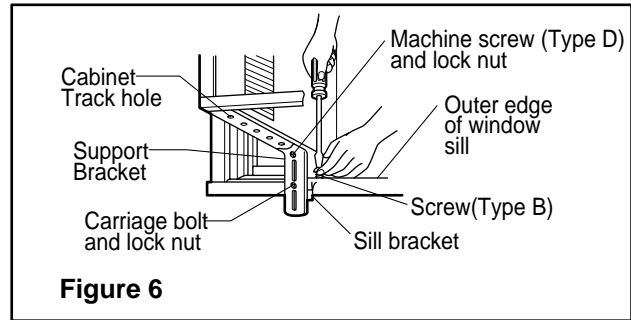
Figure 4

Cabinet Installation

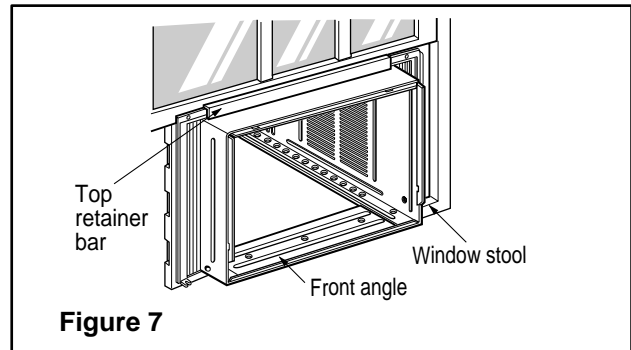
1. Open the window. Mark a line on the center of the window stool between the side window stop moldings. Loosely attach the sill bracket to the support bracket using the carriage bolt and the lock nut.



2. Attach the sill bracket to the window sill using the screws (Type B). Carefully place the cabinet on the window stool and align the center mark on the bottom front with the center line marked window stool.

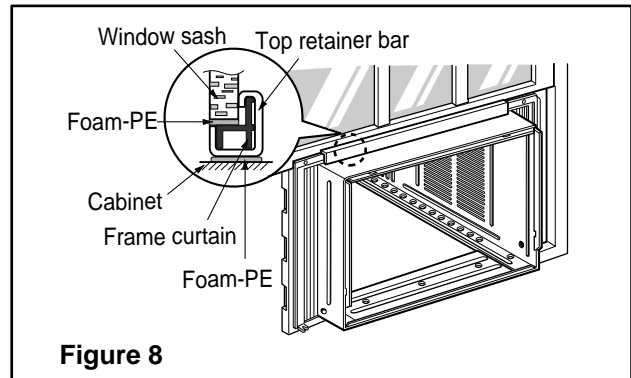


3. Using the M-screw and the lock nut, attach the support bracket to the cabinet track hole. Use the first track hole after the sill bracket on the outer edge of the window sill. Tighten the carriage bolt and the lock nut. Be sure the cabinet slants outward.



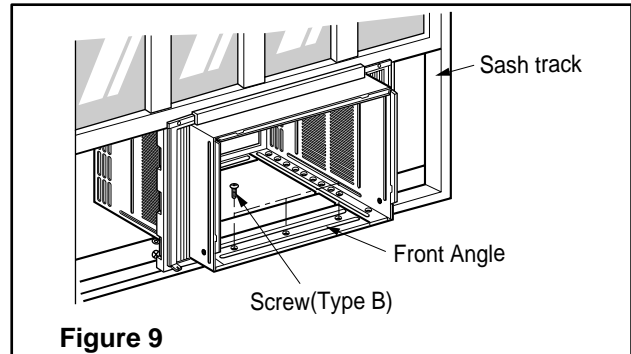
CAUTION: Do not drill a hole in the bottom pan. The unit is designed to operate with approximately 1/2" of water in bottom pan.

4. Pull the bottom window sash down behind the Top retainer bar until they meet.



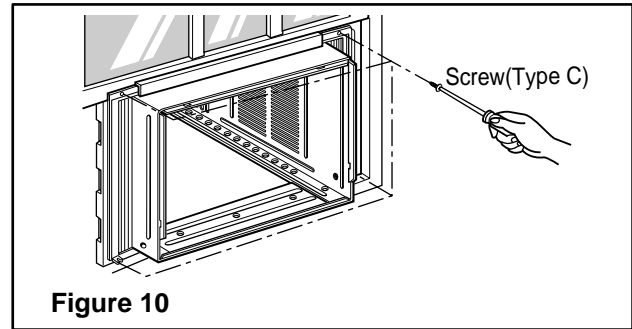
NOTICE

1. Do not pull the window sash down so tightly that the movement of Frame curtain is restricted. Attach the cabinet to the window stool by driving the screws (Type B) through the cabinet into window stool.
2. The cabinet should be installed with a very slight tilt downward toward the outside.



5. Pull each Frame curtain fully to each window sash track, and pull the bottom window sash down behind the Top retainer bar until it meets.

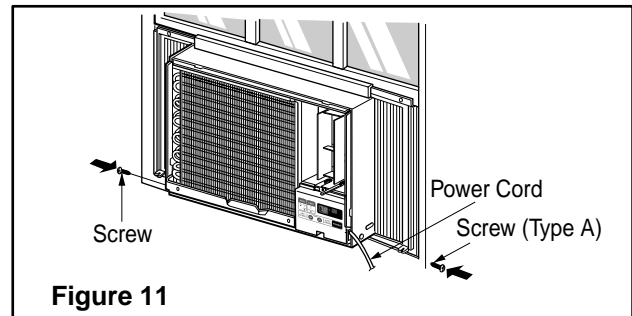
6. Attach each Frame curtain the window sash by using screws (Type C). (See Fig. 10)



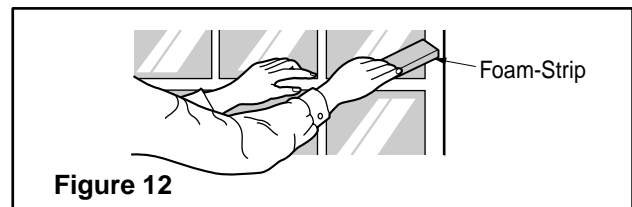
7. Slide the unit into the cabinet. (See Fig. 11)



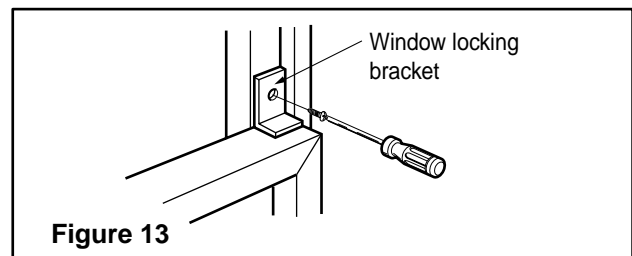
CAUTION: For security purpose, re-install screws (Type A) at cabinet's sides.



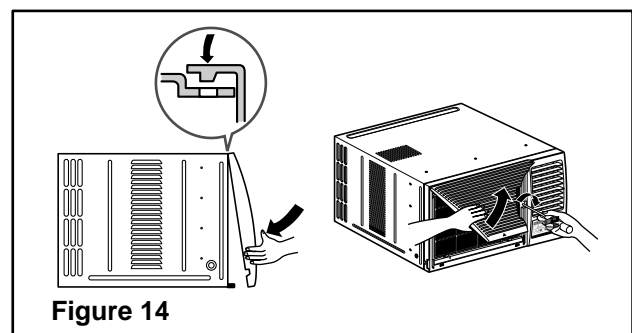
8. Cut the Foam-strip to the proper length and insert between the upper window sash and the lower window sash. (See Fig. 12)



9. Attach the Window locking bracket with a screw (Type C). (See Fig. 13)

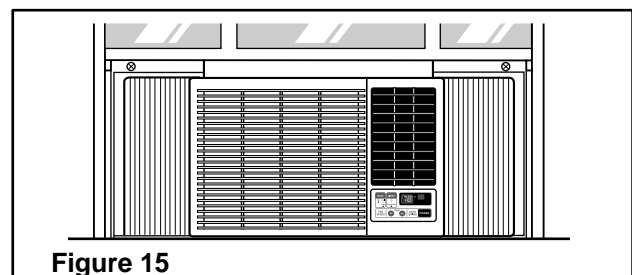


10. Attach the front grille to the cabinet by inserting the tabs on the grille into the tabs on the front of the cabinet. Push the grille in until it snaps into place. (See Fig. 14)



11. Lift the inlet grille and secure it with a screw (Type A) through the front grille. (See Fig. 14)

12. Window installation of room air conditioner is now completed.



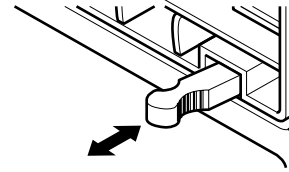
Operation

• VENTILATION

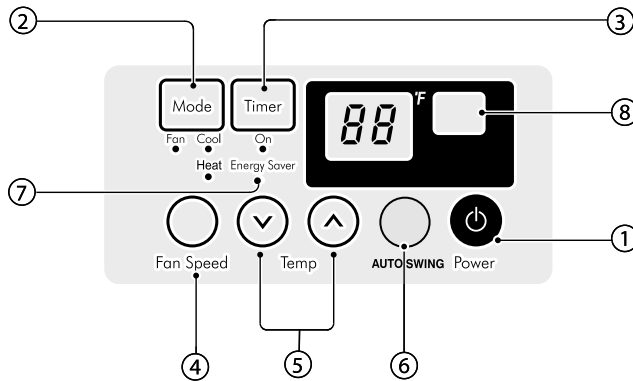
The ventilation lever must be in the CLOSE position in order to maintain the best cooling conditions.

When a fresh air is necessary in the room, set the ventilation lever to the OPEN position.

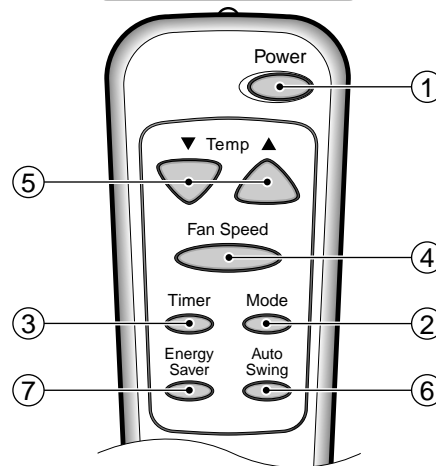
The damper is opened and room air is exhausted.



CLOSE VENT OPEN



REMOTE CONTROLLER



1. POWER BUTTON

To turn the air conditioner ON, push the button. To turn the air conditioner OFF, push the button again. This button takes priority over any other buttons.

2. OPERATION MODE SELECTION BUTTON

Everytime you push this button, it will toggle COOL, FAN and HEAT.

3. ON/OFF TIMER BUTTON

Everytime you push this button, timer is set as follows. (1Hour → 2Hours → 3Hours → 4Hours → 5Hours → 6Hours → 7Hours → 8Hours → 9Hours → 10Hours → 11Hours → 12Hours → Cancel)

4. FAN SPEED SELECTOR

Everytime you push this button, it is set as follows. (Hi[F2] → Low[F1] → Hi[F2],...)

5. ROOM TEMPERATURE SETTING BUTTON

This button can automatically control the temperature of the room. The temperature can be set within a range of 60°F to 86°F by 1°F.

6. AUTO SWING

This button can automatically control the air flow direction.

7. ENERGY SAVER

The fan stops when the compressor stops cooling.

Approximately every 3 minutes the fan will turn on and check the room air to determine if cooling is needed.

8. REMOCON SIGNAL RECEIVER



CAUTION: A slight heat odor may come from the unit when first switching to HEAT after the cooling season is over. This odor, caused by fine dust particles on the heater, will disappear quickly.

Disassembly

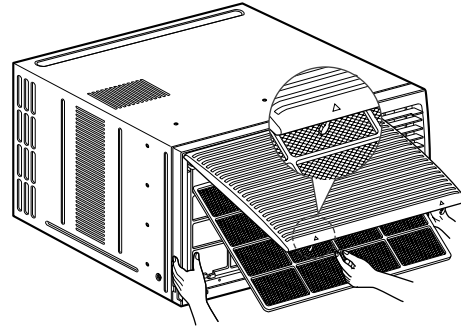
- Before the following disassembly, power switch is set to off and disconnected the power cord.

Mechanical parts

1. Front grille

1. Open the inlet grille upward or downward.
2. Remove the screw which fastens the front grille.
3. Pull the front grille from the right side.
4. Remove the front grille. (See Fig. 16)
5. Re-install the component by referring to the removal procedure.

NOTICE Mark Δ of inlet grille means opening direction.



2. Cabinet

1. After disassembling the front grille, remove the screws which fasten the cabinet at both sides. Keep these for later use.
2. Remove the two screws which fasten the cabinet at back. (See Fig. 17)
3. Pull the base pan forward.

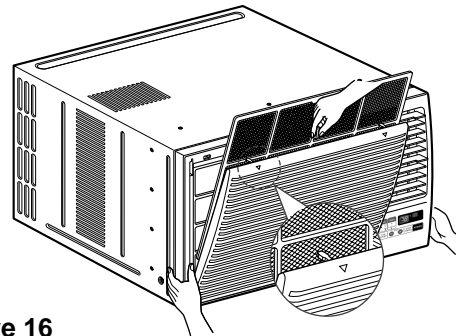


Figure 16

3. Control box

1. Remove the front grille. (Refer to section 1)
2. Pull the base pan forward so that you can remove the 2 screws which fasten the cover control at the right side. (See Fig. 18)
3. Remove the 3 screws which fasten the controlbox. (See Fig. 18)
4. Discharge the capacitor by placing a 20,000 ohm resistor across the capacitor terminals.
5. Disconnect two wire housings in the control box.
6. Pull the control box forward completely.
7. Re-install the components by referring to the removal procedure. (See Fig. 18)

(Refer to the wiring diagram found on page 29~30 in this manual and on the control box.)

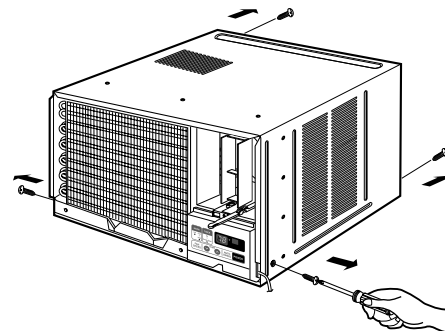


Figure 17

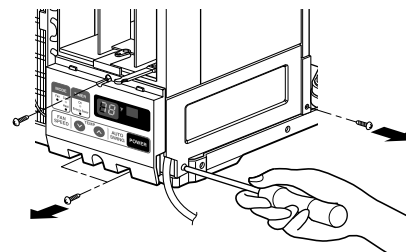


Figure 18

Air handling parts

4. Cover (at the top)

1. Remove the front grille. (Refer to section 1)
2. Remove the cabinet. (Refer to section 2)
3. Remove 11 screws which fasten the brace and covers.
4. Remove the covers and the brace. (See Fig. 19)
5. Re-install the components by referring to the removal procedure, above.

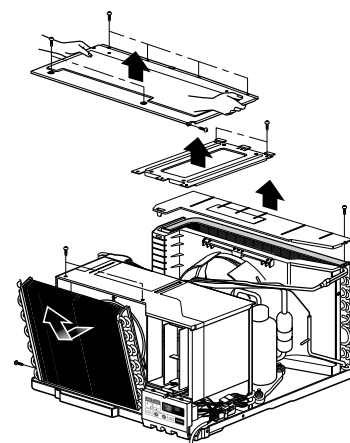


Figure 19

5. Blower

1. Remove the cover. (Refer to section 4)
2. Remove the 3 screws which fasten the evaporator at the left side and the top side. (See Fig. 19)
3. Move the evaporator sideward carefully.
4. Remove the 2 terminals carefully (See Fig. 20).
5. Remove the 3 screws which fasten the Heater Cover. (See Fig. 20)
6. Remove the Heater Cover. (See Fig. 20)
7. Remove the orifice from the air guide carefully. (See Fig. 21)
8. Remove the clamp which secures the blower with plier. (See Fig. 21)
9. Remove the blower with plier or your hand without touching blades. (See Fig. 22)
10. Re-install the components by referring to the removal procedure, above.

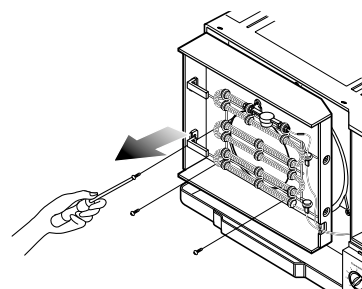


Figure 20

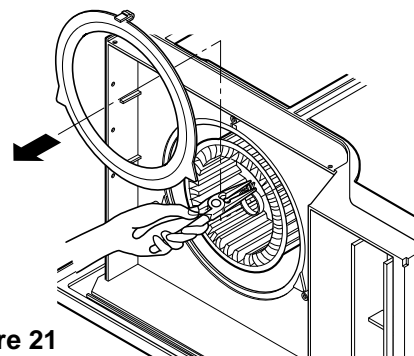


Figure 21

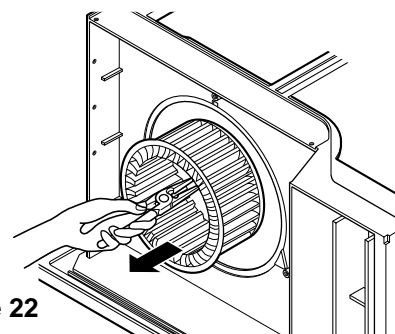


Figure 22

6. Fan

1. Remove the cabinet. (Refer to section 2)
2. Remove the brace and shroud cover. (Refer to section 4)
3. Remove the side cover with 2 screws. (See Fig. 23)
4. Remove the 5 or 6 screws which fasten the condenser.
5. Move the condenser sideways carefully.
6. Remove the clamp which secures the fan.
7. Remove the fan. (See Fig. 23)
8. Re-install the components by referring to the removal procedure, above.

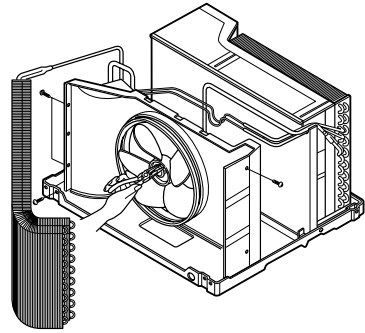


Figure 23

7. Shroud

1. Remove the fan. (Refer to section 6)
2. Remove the 2 screws which fasten the shroud.
3. Remove the shroud. (See Fig. 24)
4. Re-install the component by referring to the removal procedure, above.

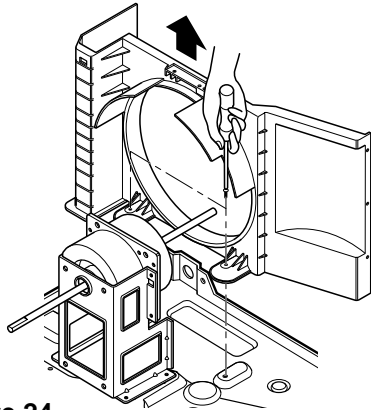


Figure 24

Electrical parts

8. Motor

1. Remove the cabinet. (Refer to section 2)
2. Remove the cover control and disconnect a wire housing in control box. (Refer to section 3)
3. Remove the blower. (Refer to section 5)
4. Remove the fan. (Refer to section 6)
5. Remove the 4 screws which fasten the motor. (See Fig. 25)
6. Remove the motor.
7. Re-install the components by referring to the removal procedure, above.

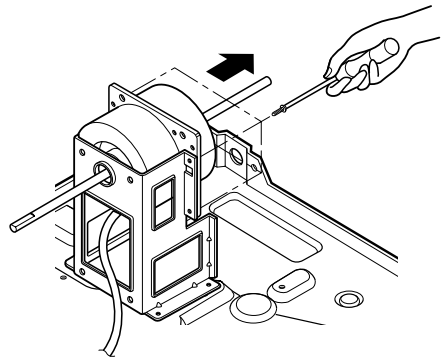


Figure 25

9. Compressor

1. Remove the cabinet. (Refer to section 2)
2. Discharge the refrigerant system using Freon™ Recovery System.
If there is no valve to attach the recovery system, install one (such as a watco a-1) before venting the Freon™. Leave the valve in place after servicing the system.
3. Disconnect the 3 leads from the compressor.
4. After purging the unit completely, unbraid the suction and discharge tubes at the compressor connections.
5. Remove the 3 nuts and the 3 washers which fasten the compressor. (See Fig. 26)
6. Remove the compressor.
7. Re-instill the components by referring to the removal procedure, above.

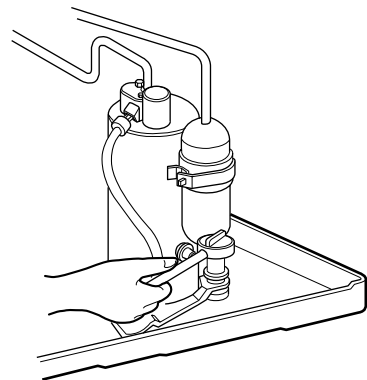


Figure 26

10. CAPACITOR

1. Remove the control box. (Refer to section 3)
2. Remove the screw and knobs which fasten the display panel.
3. Disconnect the 2 leads from the rocker switch and remove the panel.
4. Remove a screw and unfold the control box. (See Fig. 27)
5. Remove the screw and the clamp which fastens the capacitor. (See Fig. 27)
6. Disconnect all the leads of capacitor terminals.
7. Re-install the components by referring to the removal procedure, above.

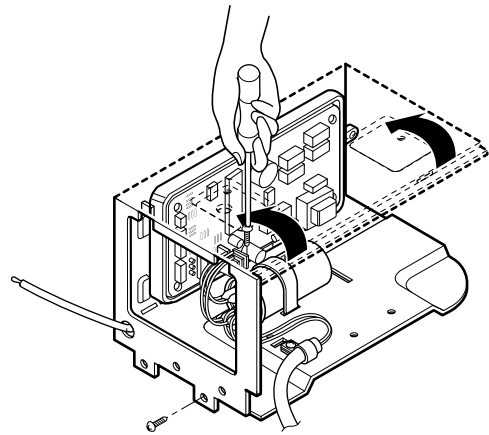


Figure 27

11. POWER CORD

1. Remove the control box. (Refer to section 3)
2. Unfold the control box. (Refer to section 10)
3. Disconnect the grounding screw from the control box.
4. Disconnect 2 receptacles.
5. Remove a screw which fastens the clip cord.
6. Pull the power cord. (See Fig. 28)
7. Re-install the component by referring to the removal procedure, above.
(Use only one ground-marked hole for ground connection.)
8. If the supply cord of this appliance is damaged, it must be replaced by the special cord.
(The special cord means the cord which has the same specification marked on the supply cord fitted to the unit.)

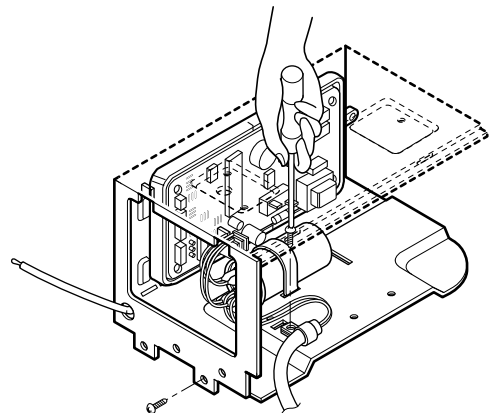


Figure 28

12. THERMISTOR

1. Remove the control box. (Refer to section 3)
2. Unfold the control box. (Refer to section 10)
3. Disconnect the thermistor terminals from main P.W.B assembly.
4. Remove the thermistor.
5. Re-install the components by referring to the removal procedure above. (See Figure 30)

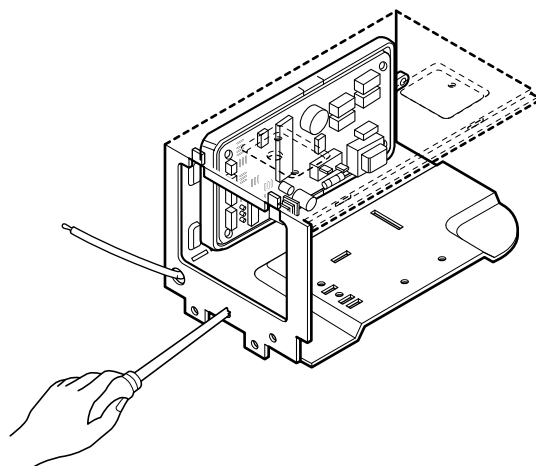


Figure 29

13. SYNCHRONOUS MOTOR

1. Remove the control box. (Refer to section 3)
2. Unfold the control box. (Refer to section 10)
3. Remove the crankshaft.
4. Disconnect all the leads of the synchronous motor.
5. Remove the 2 screws which fasten the synchronous motor. (See Fig. 30)
6. Re-install the components by referring to the removal procedure, above.

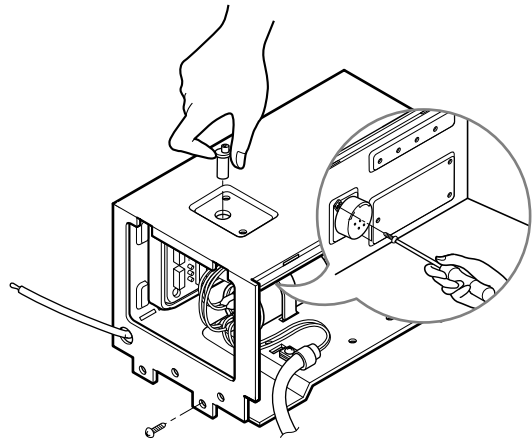


Figure 30

Refrigeration cycle



CAUTION: Discharge the refrigerant system using Freon™ Recovery System. If there is no valve to attach the recovery system, install one (such as a WATCO A-1) before venting the Freon™. Leave the valve in place after servicing the system.

16. CONDENSER

1. Remove the cabinet. (Refer to section 2)
2. Remove the brace and the shroud cover. (Refer to section 4)
3. Remove 2 screws which fasten the side cover. (See Fig. 31)
4. Remove the 5 or 6 screws which fasten the condenser.
5. After discharging the refrigerant completely, unbrazed the interconnecting tube at the condenser connections.
6. Remove the condenser.
7. Re-install the components by referring to notes. (See Fig. 31)

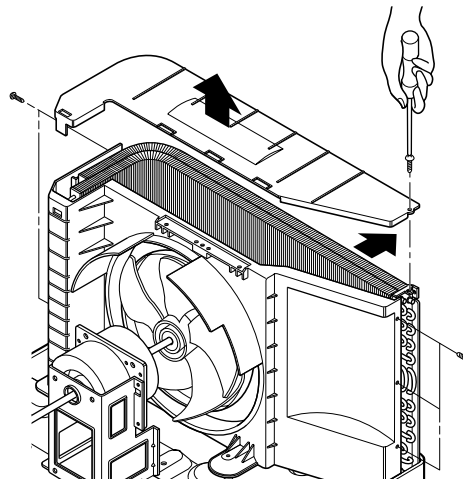


Figure 31

17. EVAPORATOR

1. Remove the cabinet. (Refer to section 2)
2. Remove the top cover and the brace. (Refer to section 4)
3. Discharge the refrigerant completely.
4. Remove the 3 screws which fasten the evaporator at the left side and the top side.
5. Move the evaporator sideward carefully and then unbrazed the interconnecting tube at the evaporator connectors.
6. Remove the evaporator.
7. Re-install the components by referring to notes. (See Fig. 32)

18. CAPILLARY TUBE

1. Remove the cabinet. (Refer to section 2)
2. Remove the brace. (Refer to section 4)
3. After discharging the refrigerant completely, unbrazed the interconnecting tube at the capillary tube.
4. Remove the capillary tube.
5. Re-install the components by referring to notes.

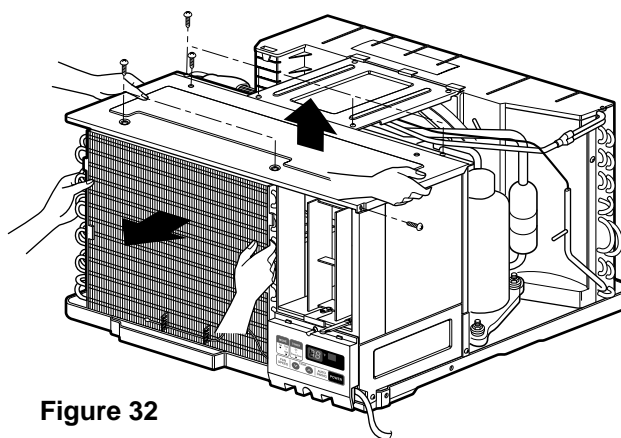


Figure 32

NOTICE

- Replacement of the refrigeration cycle.

1. When replacing the refrigeration cycle, be sure to discharge the refrigerant system using a Freon™ recovery System.
If there is no valve to attach the recovery system, install one (such as a WATCO A-1) before venting the Freon™. Leave the valve in place after servicing the system.
2. After discharging the unit completely, remove the desired component, and unbrace the pinch-off tubes.
3. Solder service valves into the pinch-off tube ports, leaving the valves open.
4. Solder the pinch-off tubes with Service valves.
5. Evacuate as follows.
 - 1) Connect the vacuum pump, as illustrated Fig. 35A.
 - 2) Start the vacuum pump, slowly open manifold valves A and B with two full turns counterclockwise and leave the valves closed.
The vacuum pump is now pulling through valves A and B up to valve C by means of the manifold and entire system.



CAUTION: If high vacuum equipment is used, just crack valves A and B for a few minutes, then open slowly with the two full turns counterclockwise. This will keep oil from foaming and being drawn into the vacuum pump.

- 3) Operate the vacuum pump for 20 to 30 minutes, until 600 microns of vacuum is obtained. Close valves A and B, and observe vacuum gauge for a few minutes. A rise in pressure would indicate a possible leak or moisture remaining in the system. With valves A and B closed, stop the vacuum pump.
- 4) Remove the hose from the vacuum pump and place it on the charging cylinder. See Fig. 35B. Open valve C.
Discharge the line at the manifold connection.
- 5) The system is now ready for final charging.

6. Recharge as follows :
 - 1) Refrigeration cycle systems are charged from the High-side. If the total charge cannot be put in the High-side, the balance will be put in the suction line through the access valve which you installed as the system was opened.
 - 2) Connect the charging cylinder as shown in Fig. 35B.
With valve C open, discharge the hose at the manifold connection.
 - 3) Open valve A and allow the proper charge to enter the system. Valve B is still closed.
 - 4) If more charge is required, the high-side will not take it. Close valve A.
 - 5) With the unit running, open valve B and add the balance of the charge.
 - a. Do not add the liquid refrigerant to the Low-side.
 - b. Watch the Low-side gauge; allow pressure to rise to 30 lbs.
 - c. Turn off valve B and allow pressure to drop.
 - d. Repeat steps B and C until the balance of the charge is in the system.
 - 6) When satisfied the unit is operating correctly, use the pinch-off tool with the unit still running and clamp on to the pinch-off tube. Using a tube cutter, cut the pinch-off tube about 2 inches from the pinch-off tool. Use sil-fos solder and solder pinch-off tube closed. Turn off the unit, allow it to set for a while, and then test the leakage of the pinch-off connection.

Equipment needed: Vacuum pump, Charging cylinder, Manifold gauge, Brazing equipment. Pin-off tool capable of making a leak-proof seal, Leak detector, Tubing cutter, Hand Tools to remove components, Service valve.

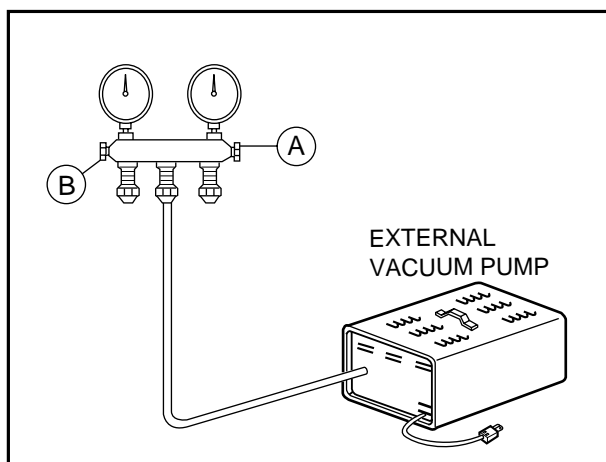
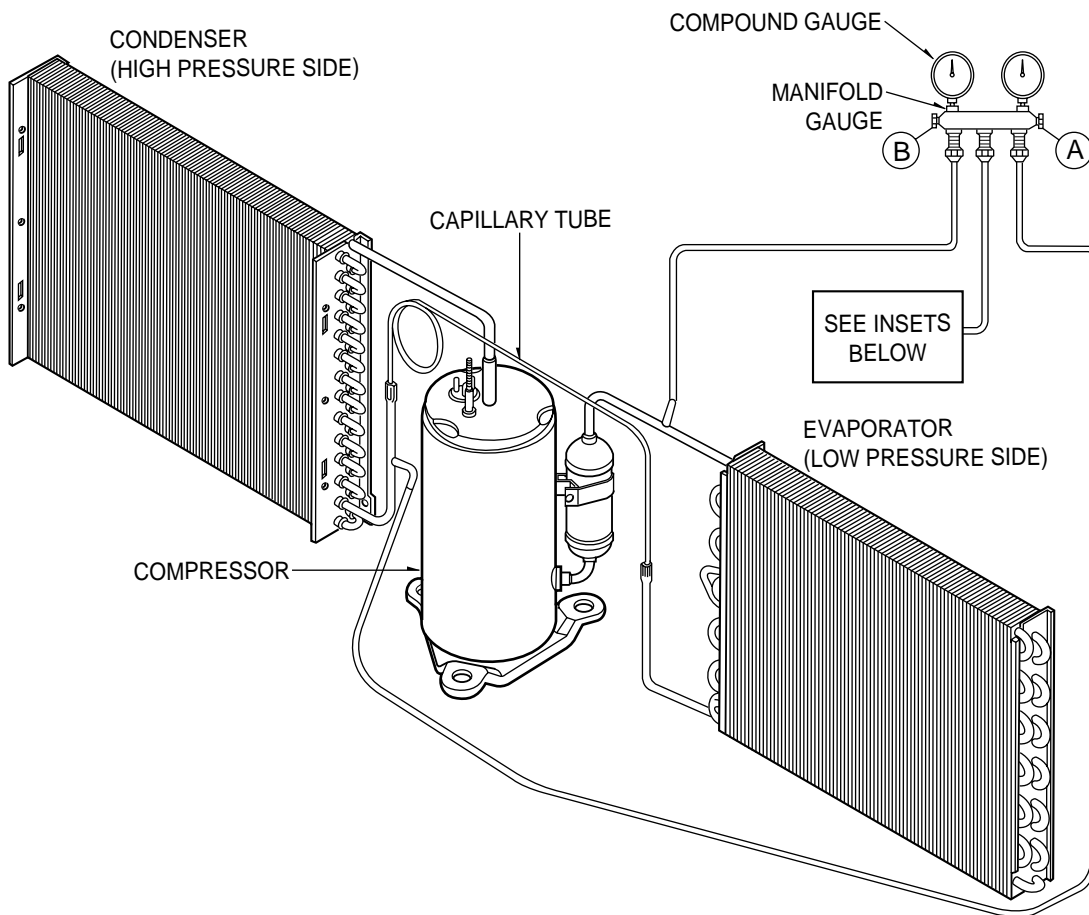


Figure 31A-Pulling Vacuum

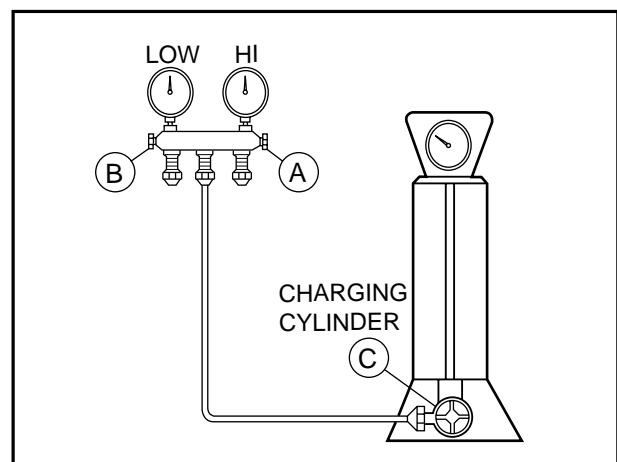
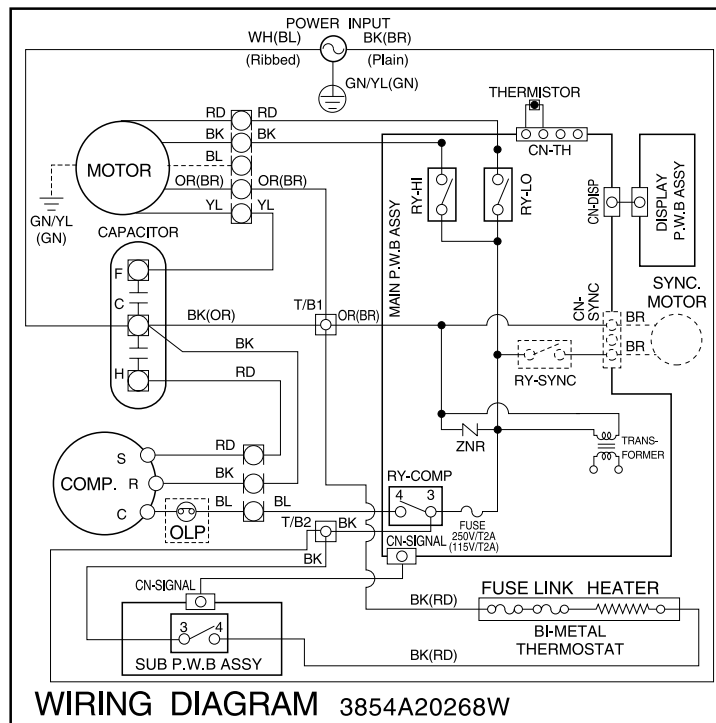


Figure 31B-Charging

Schematic Diagram

Wiring Diagram

■ ELECTRIC HEATING MODEL



Troubleshooting Guide

Piping System

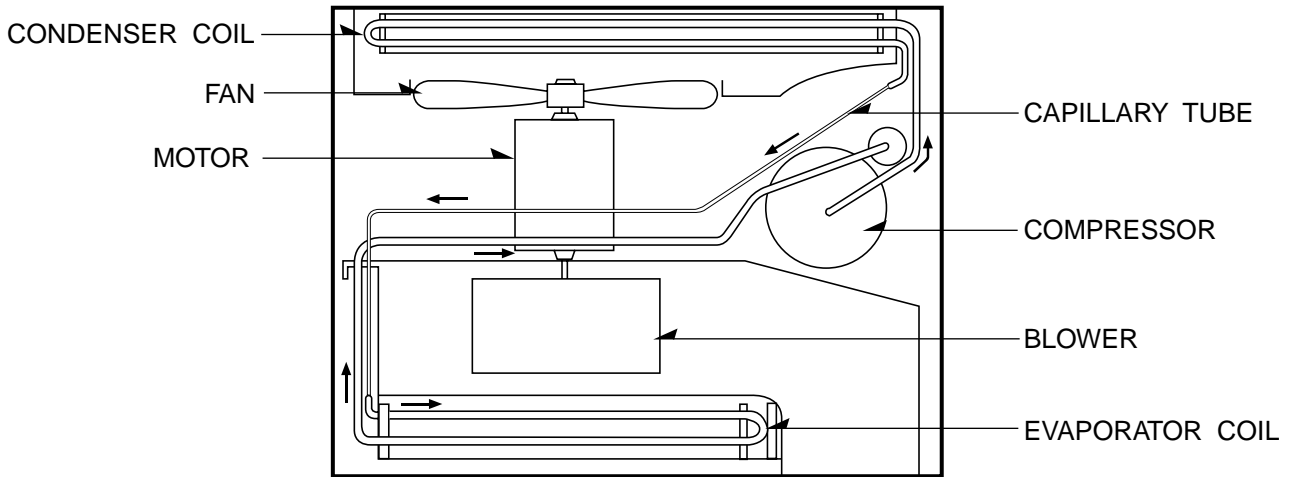
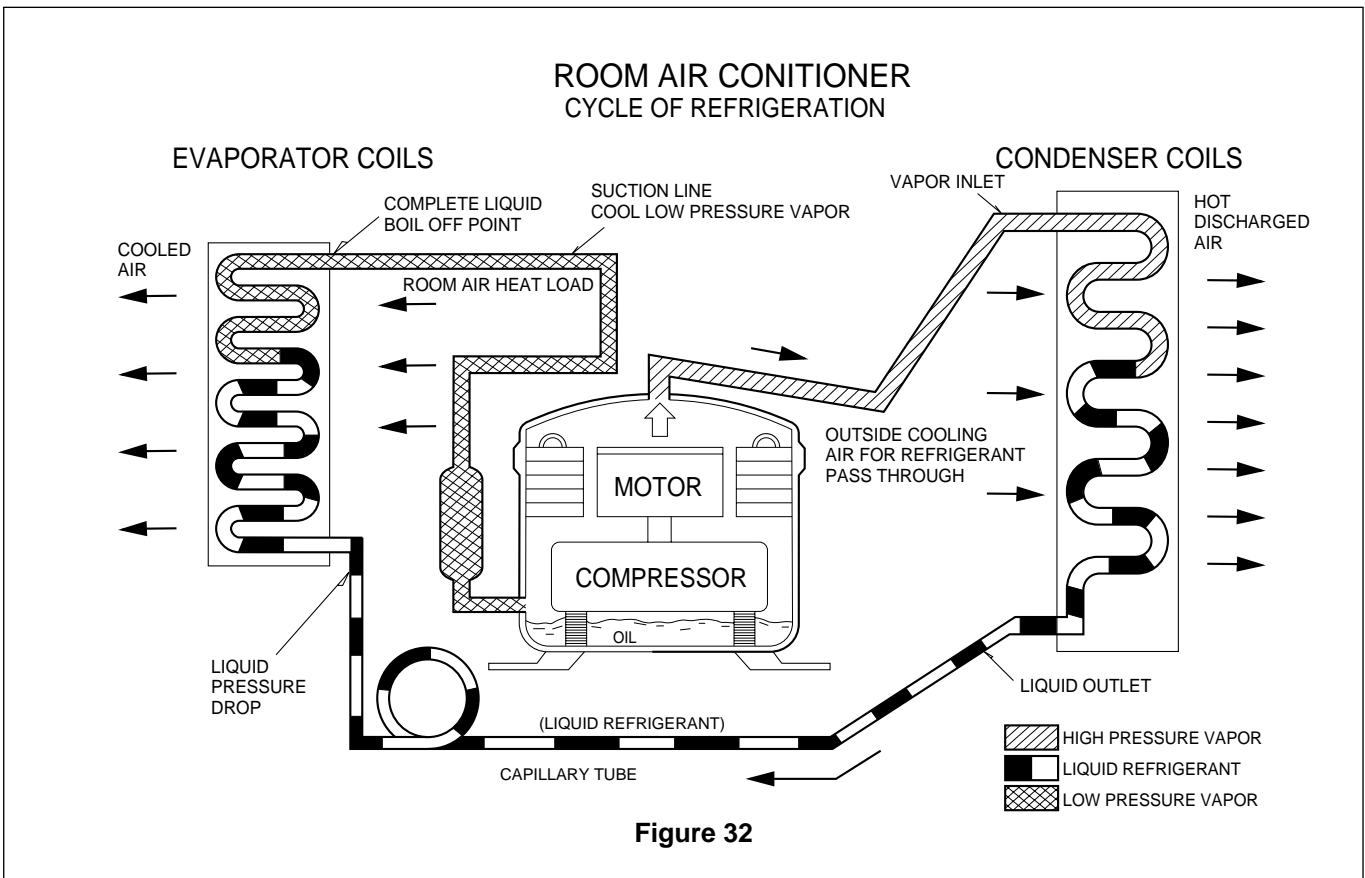


Figure 32 is a brief description of the important components and their function in what is called the refrigeration system. This will help you to understand the refrigeration cycle and the flow of the refrigerant in the cooling cycle.

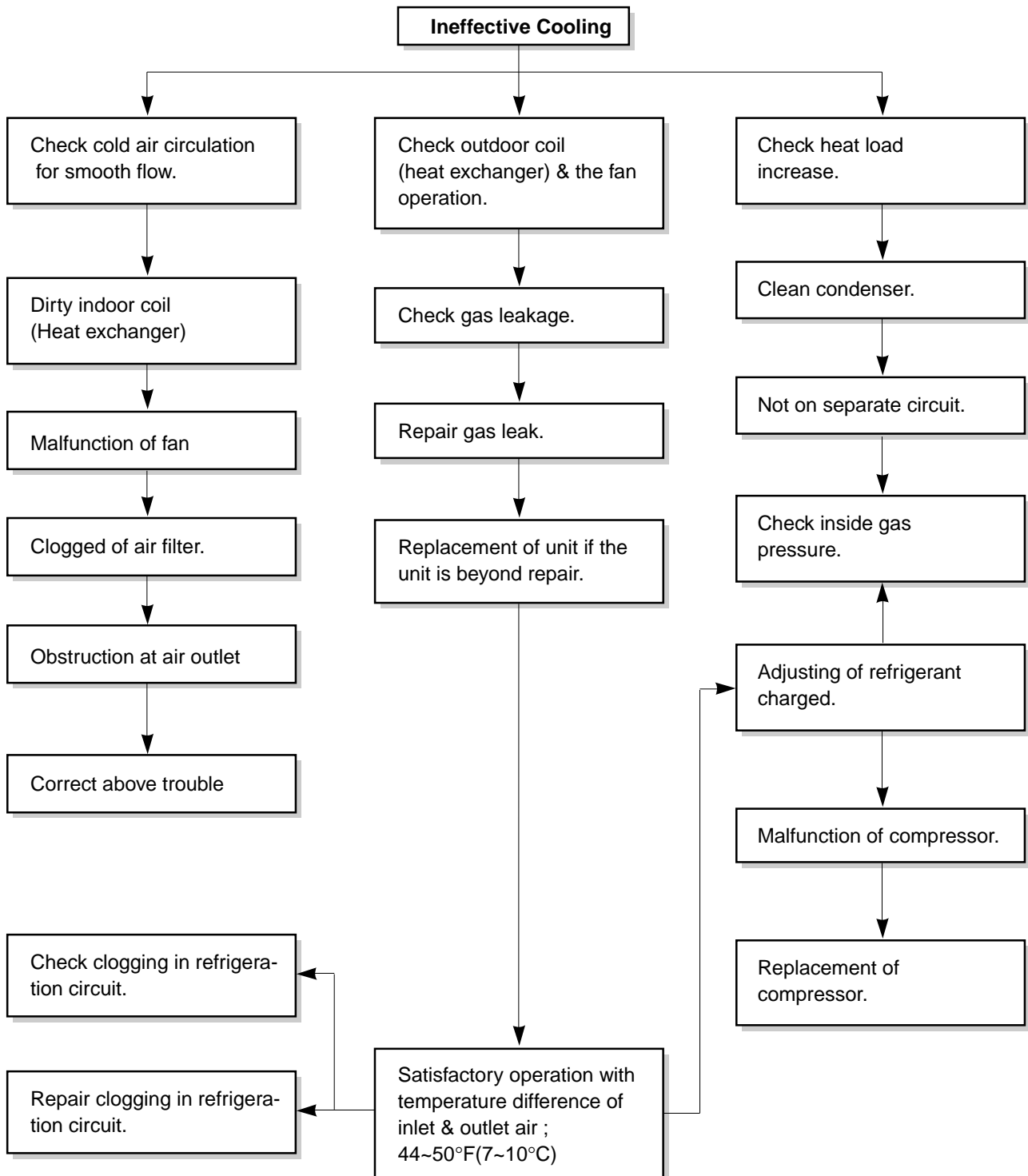


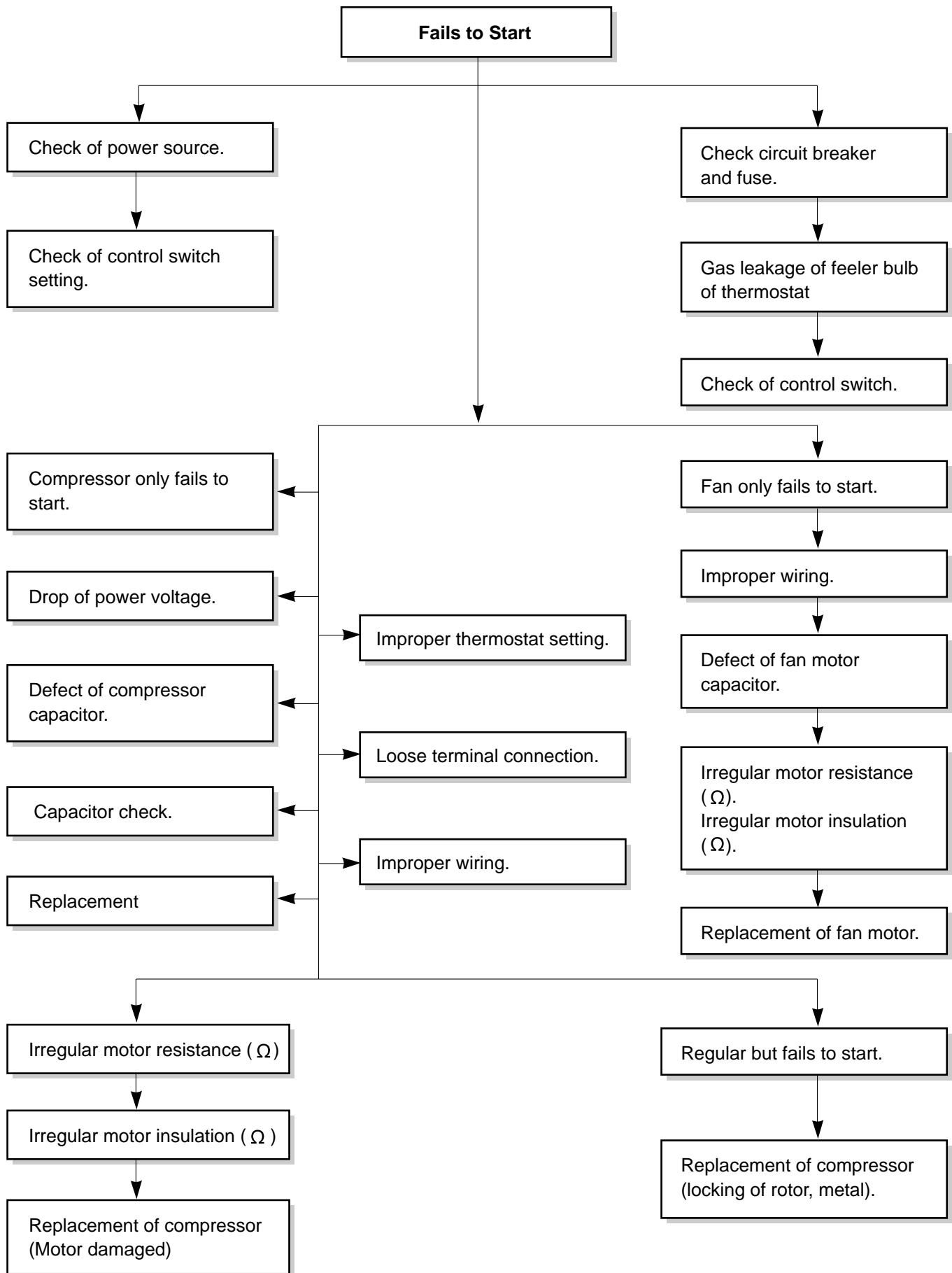
Troubleshooting Guide

In general, possible trouble is classified in two kinds.

The one is called Starting Failure which is caused from an electrical defect, and the other is ineffective Air Conditioning caused by a defect in the refrigeration circuit and improper application.

Unit runs but poor cooling.





Room Air Conditioner Voltage Limits

| NAME PLATE RATING | MINIMUM | MAXIMUM |
|-------------------|---------|---------|
| 208~230±10% | 187V | 253V |
| 115±10% | 104V | 126V |

| COMPLAINT | CAUSE | REMEDY |
|--|---|---|
| Fan motor will not run. | No power | Check voltage at outlet. Correct if necessary. |
| | Power supply cord | Check voltage to rotary switch. If none, check power supply cord. Replace cord if circuit is open. |
| | Rotary switch | Check switch continuity. Refer to wiring diagram for terminal identification. Replace switch if defective. |
| | Wire disconnected or connection loose | Connect wire. Refer to wiring diagram for terminal identification. Repair or replace loose terminal. |
| | Capacitor (Discharge capacitor before testing.) | Test capacitor. Replace if not within ±10% of manufacturer's rating. Replace if shorted, open, or damaged. |
| | Will not rotate | Fan blade hitting shroud or blower wheel hitting scroll. Realign assembly. Units using slinger ring for condenser fan must have 1/4 to 5/16 inch clearance to the base. If it hits the base, shim up the bottom of the fan motor with mounting screw(s). Check fan motor bearings; if motor shaft will not rotate, replace the motor. |
| Fan motor runs intermittently | Revolves on overload. | Check voltage. If not within limits, call an electrician. Test capacitor. Check bearings. Does the fan blade rotate freely? If not, replace fan motor. Pay attention to any change from high speed to low speed. If the speed does not change, replace the motor. |
| Fan motor noise. | Fan | If cracked, out of balance, or partially missing, replace it. |
| | Blower | If cracked, out of balance, or partially missing, replace it. |
| | Loose clamper | Tighten it. |
| | Worn bearings | If knocking sounds continue when running or loose, replace the motor. If the motor hums or noise appears to be internal while running, replace motor. |
| Compressor will not run, but fan motor runs. | Voltage | Check voltage. If not within limits, call an electrician. |
| | Wiring | Check the wire connections, if loose, repair or replace the terminal. If wires are off, refer to wiring diagram for identification, and replace. Check wire locations. If not per wiring diagram, correct. |
| | Rotary | Check for continuity, refer to the wiring diagram for terminal identification. Replace the switch if circuit is open. |

| COMPLAINT | CAUSE | REMEDY |
|--|---|---|
| Compressor will not run, but fan motor runs. | Thermostat | Check the position of knob. If not at the coldest setting, advance the knob to this setting and restart unit. Check continuity of the thermostat. Replace thermostat if circuit is open. |
| | Capacitor (Discharge capacitor before servicing.) | Check the capacitor. Replace if not within $\pm 10\%$ of manufacturer's rating. Replace if shorted, open, or damaged. |
| | Compressor | Check the compressor for open circuit or ground. If open or grounded, replace the compressor. |
| | Overload | Check the compressor overload, if externally mounted. Replace if open. (If the compressor temperature is high, remove the overload, cool it, and retest.) |
| Compressor cycles on overload. | Voltage | Check the voltage. If not within limits, call an electrician. |
| | Overload | Check overload, if externally mounted. Replace if open. (If the compressor temperature is high, remove the overload, cool, and retest.) |
| Compressor cycles on overload. | Fan motor | If not running, determine the cause. Replace if required. |
| | Condenser air flow restriction | Remove the cabinet. Inspect the interior surface of the condenser; if restricted, clean carefully with a vacuum cleaner (do not damage fins) or brush. Clean the interior base before reassembling. |
| | Condenser fins (damaged) | If condenser fins are closed over a large area on the coil surface, head pressures will increase, causing the compressor to overload. Straighten the fins or replace the coil. |
| Compressor cycles on overload. | Capacitor | Test capacitor. |
| | Wiring | Check the terminals. If loose, repair or replace. |
| | Refrigerating system | Check the system for a restriction. |
| Insufficient cooling or heating | Air filter | If restricted, clean or replace. |
| | Exhaust damper door | Close if open. |
| | Unit undersized | Determine if the unit is properly sized for the area to be cooled. |
| Excessive noise | Blower or fan | Check the set screw or clamp. If loose or missing, correct. If the blower or fan is hitting air guide, rearrange the air handling parts. |
| | Copper tubing | Remove the cabinet carefully and rearrange tubing not to contact cabinet, compressor, shroud, and barrier. |
| Auto air-swing fails. | Rotary switch. | Set the knob to HIGH COOL or LOW COOL while rocker switch is ON. |
| | Wiring | Check terminals. If loose, repair or replace. |
| | Synchronous motor. | Check the synchronous motor for open circuit. |

Specifications and performance data subject to change without notice.

HEAT CONTROLLER, INC.

1900 WELLWORTH AVENUE • JACKSON, MICHIGAN 49203

THE QUALITY LEADER IN CONDITIONING AIR

04/18/07